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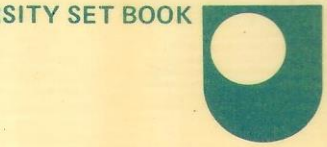
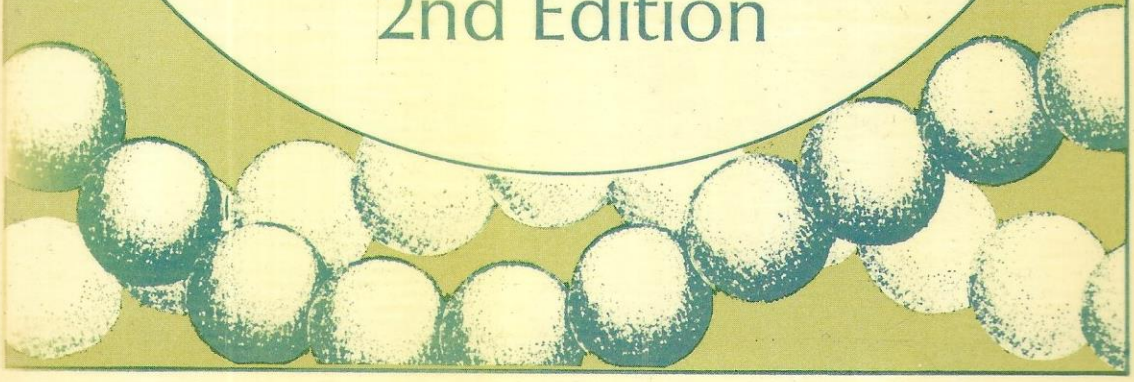
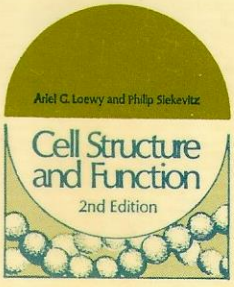


Ariel G. Loewy and Philip Siekevitz

Cell Structure and Function

2nd Edition





Greatly expanded and thoroughly revised, this text is still directed to beginning biology students, particularly those who have had some training in the physical sciences. Emphasis is on correlating structure and function and demonstrating how the major advances in modern cell biology have been achieved through an integration of structure and function, especially at the molecular level. Major features of this edition include (1) two new chapters on "Cell Function, the Behavioural Basis for Biological Organization" and "From Molecules to Biological Structures," (2) several new topics such as photosynthesis, allosteric regulation of enzymes, and sequence determination of nucleic acids, (3) many new electron micrographs, charts, graphs, and drawings, (4) greater emphasis on the historical development of important topics, and (5) a more detailed treatment of the topics introduced.

CONTENTS: CELL BIOLOGY; The Common Denominator of Living Matter; Life and the Second Law of Thermodynamics; THE NATURAL HISTORY OF THE CELL; Cell Function, the Behavioural Basis for Biological Organization; Cell Structure, the Organizational Basis for Biological Function. BIOLOGICAL STATICS: Life and the Periodic Table; Water and Life; Molecules of the Living Machine; Nucleic Acids. Carriers of Biological Information; Proteins. Agents of Biological Specificity. BIOLOGICAL DYNAMICS: Enzyme Catalysis, Mechanism for Biological Regulation; From Molecules to Biological Structures; Metabolic Pathways, the Flow of Carbon Through the Cell; Mitochondria, Chloroplasts, and the Fixation of Energy; The Nucleus and the Replication and Transcription of Information; The Ribosome and the Translation of Information. The Cytoplasmic Matrix and the Conversion of Chemical Energy into Work; The Membrane System and Exchange of Materials; Regulation of Cell Function and Cell Structure; Summary.

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A HOLT INTERNATIONAL EDITION

DIVERSITY OF ORGANISMS

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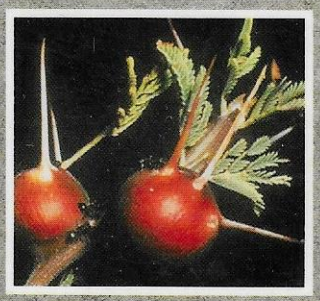

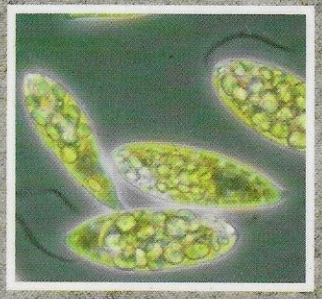




BIOLOGY: FORM AND FUNCTION

Diversity of Organisms *is the first of five books in the series* Biology: Form and Function, *which has been designed for first and second year undergraduates. Each book combines carefully structured text with questions (and answers) for self-assessment, and is ideally suited to students working independently.*

Diversity of Organisms *describes the structure and habits of living organisms, including viruses, micro-organisms, plants and animals. It considers how scientists acquire and use knowledge about these organisms to investigate their origins and relationships, and to explore basic biological mechanisms. The principles of the comparative method are explained, using examples taken from current research. The text is illustrated with numerous diagrams and full-colour photographs.*

The other titles in the series are:

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Edited by Norman Cohen

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The main theme of Cell Structure, Function and Metabolism *is how cell metabolism can be understood in terms of the structure and function of subcellular components. It describes the structure and function of the major cell organelles, and, moving further down in scale, that of the main classes of biological macromolecules. The key role of enzymes in facilitating metabolism and its control is explored, particularly in those pathways yielding energy. Finally, an examination is undertaken of the structure of the cell membrane, revealing how this enables the cell to retain its integrity and yet interact with its surrounding environment.*

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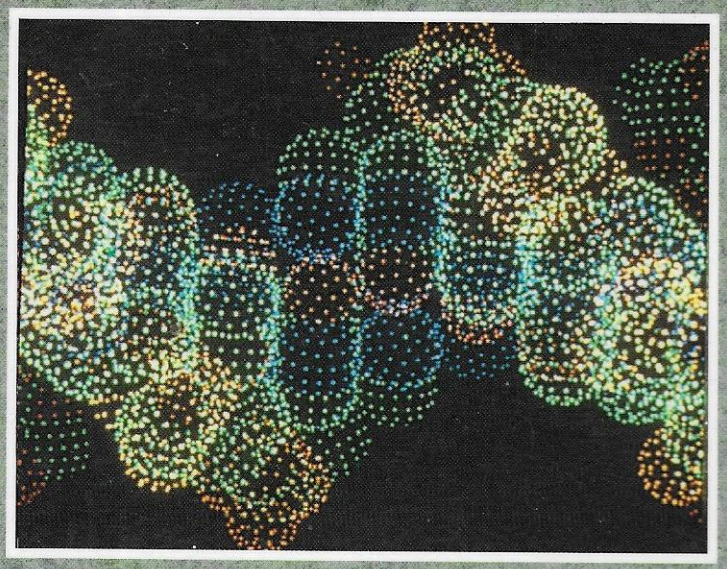

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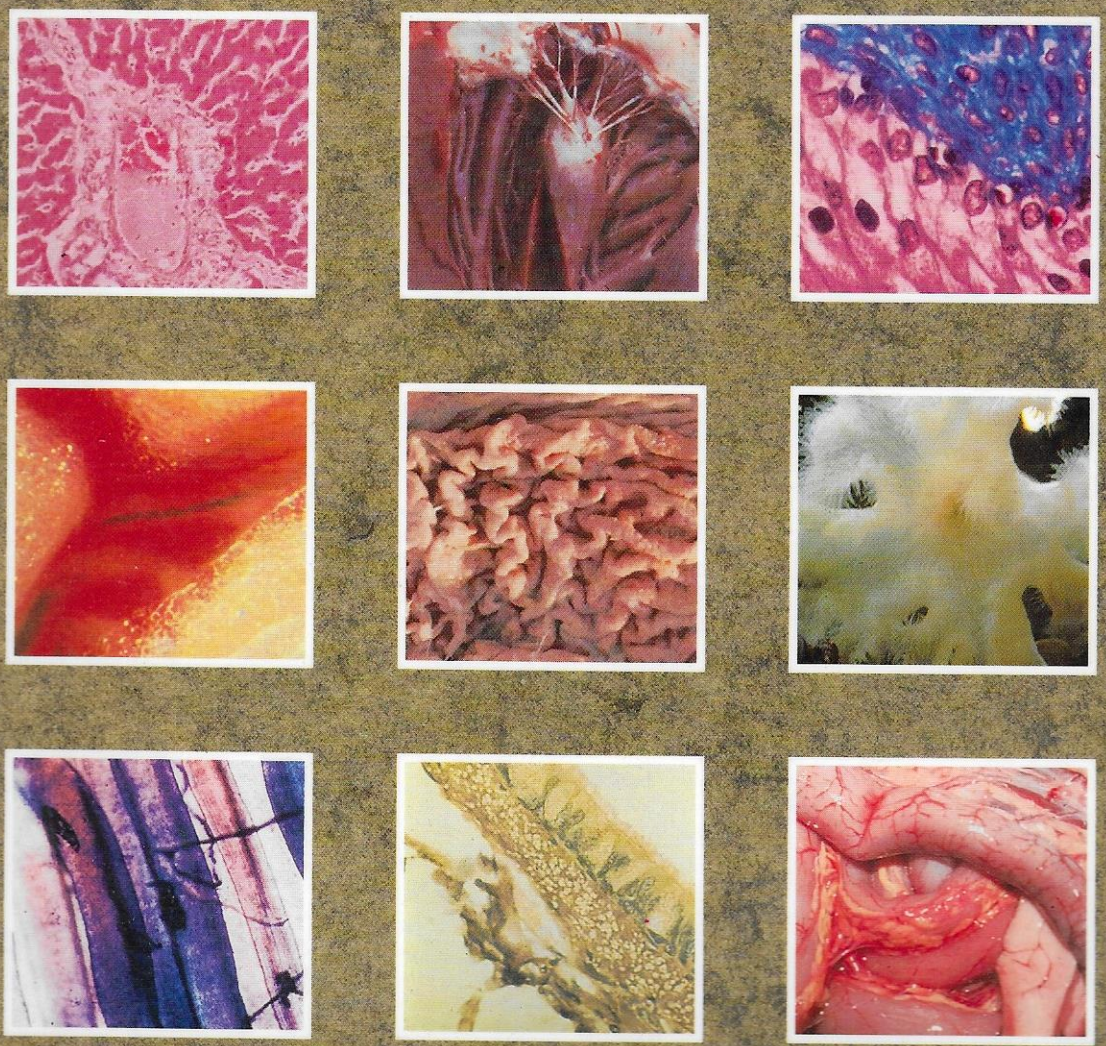

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Animal Physiology *looks at how animals function. Dealing largely with mammals and other vertebrates, the book examines the physiological mechanisms of processes such as internal communication, respiration, reproduction, digestion and excretion. The regulation and control of the various systems is considered throughout, along with the physiological basis for the adaptation of animals to a range of different environments.*

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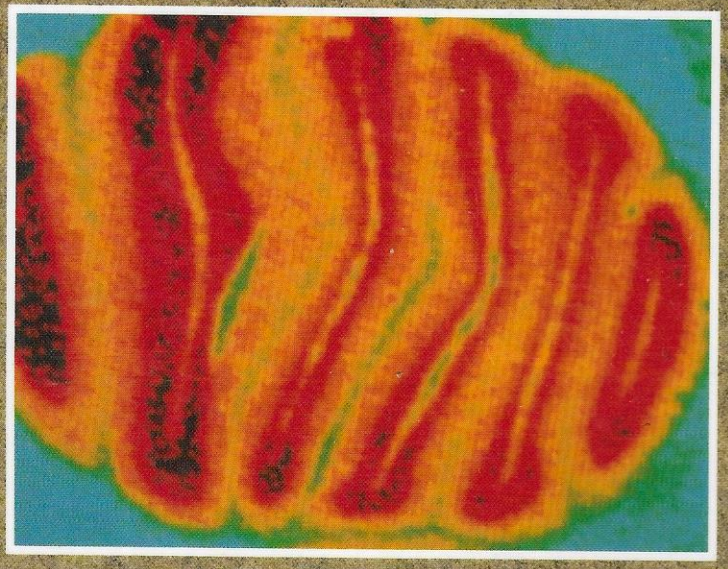

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PLANT PHYSIOLOGY

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BIOLOGY: FORM AND FUNCTION

Plant Physiology *is the fourth of five books in the series* Biology: Form and Function, *which has been designed for first and second year undergraduates. Each book combines carefully structured text with questions (and answers) for self-assessment, and is ideally suited to students working independently.*

How plants function in different environments is the main theme of Plant Physiology. *The book deals mainly with green plants, particularly angiosperms, and considers first the structure of plant tissues. It then explores the various ways in which plants obtain energy (in photosynthesis), mineral nutrients and water, how materials are transported internally and, finally, how growth in plants is coordinated and controlled.*

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DEVELOPMENT

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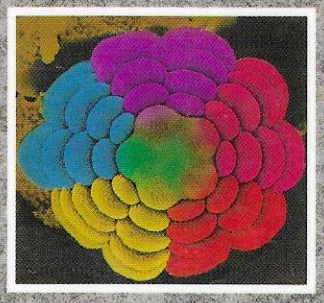
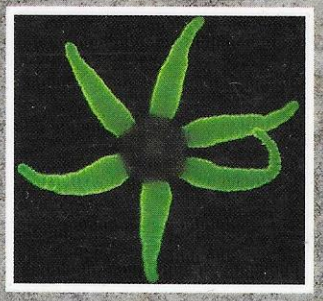
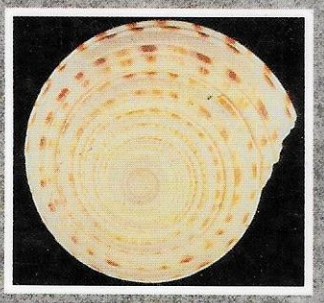
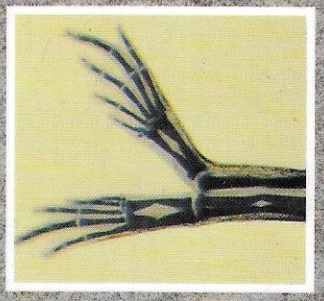

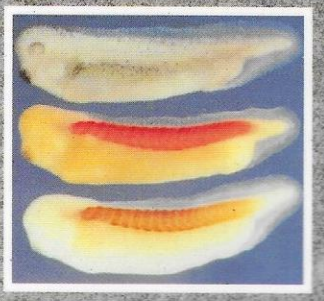

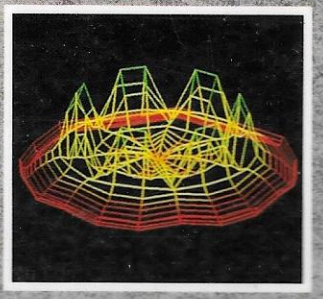


BIOLOGY: FORM AND FUNCTION

Development *is the last of five books in the series* Biology: Form and Function, *which has been designed for first and second year undergraduates. Each book combines carefully structured text with questions (and answers) for self-assessment, and is ideally suited to students working independently.*

Development *is concerned with the processes that generate complex structure in organisms and maintain their integrated forms by growth and regeneration. The comparative approach is used to examine developmental processes in species as diverse as green algae and higher vertebrates. The role of genes in development, cell differentiation, cell-cell interactions, induction and morphogenesis is studied in such a way that all the levels of coordinated transformation in the developing organism can be understood within an integrated framework.*

The other titles in the series are:

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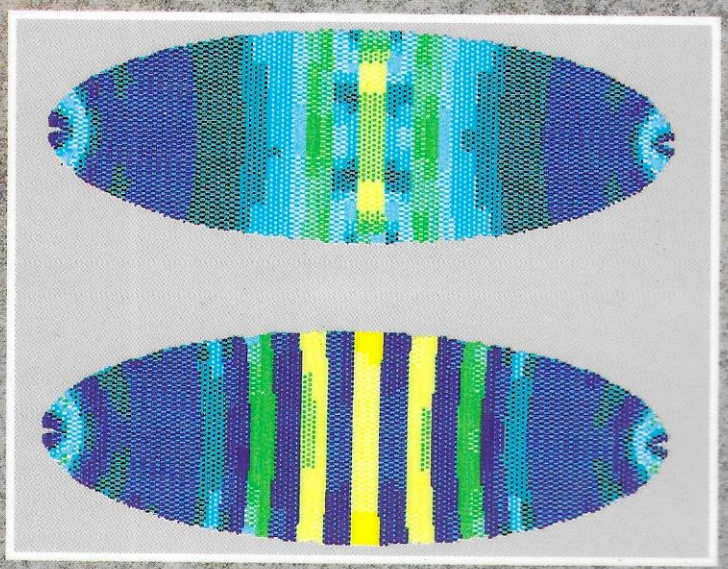

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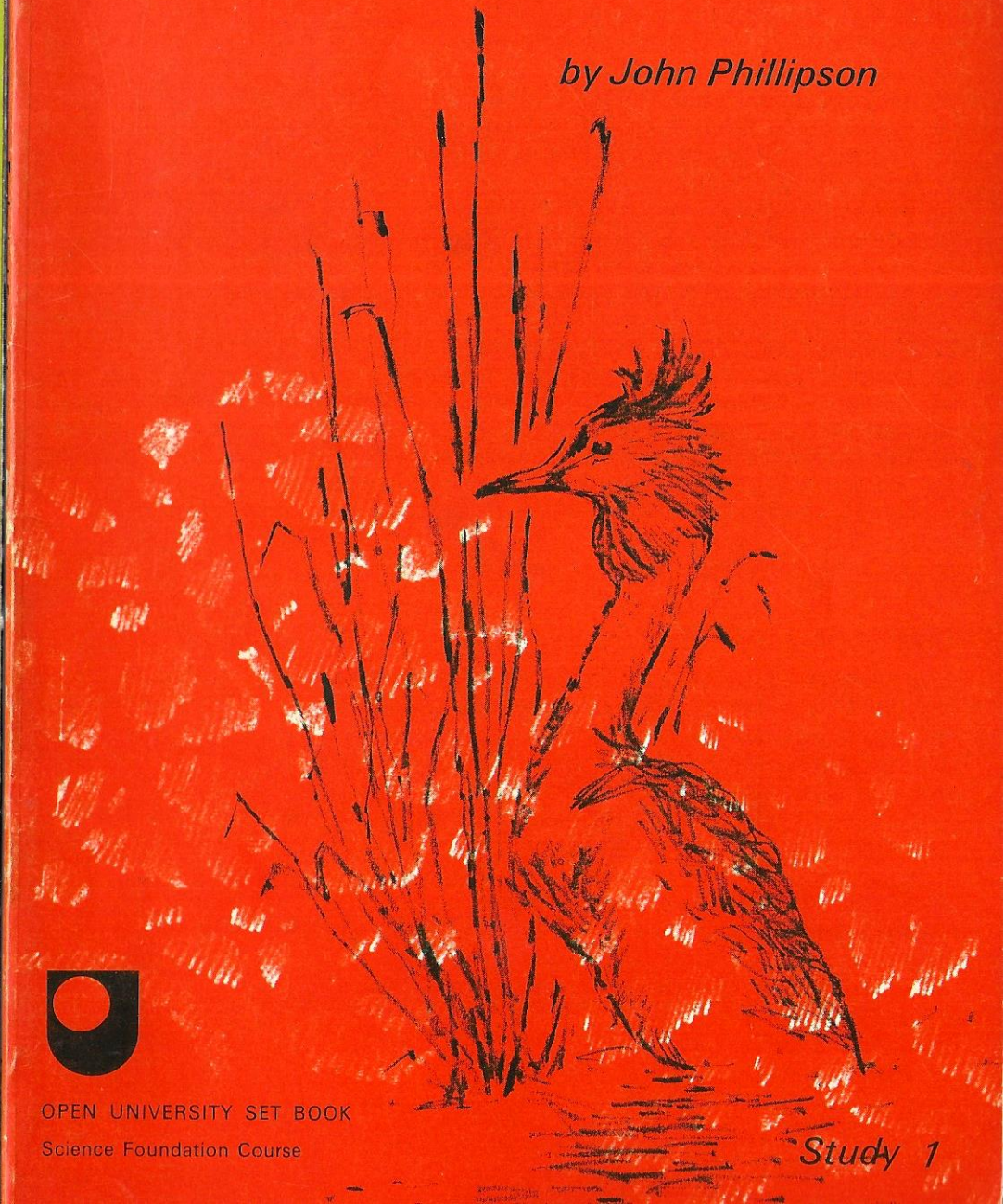

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Translocation in Plants introduces the major concepts and problems in the circulation of water, minerals and metabolites within plant tissues via the xylem and phloem. It surveys some of the complexities of long distance transport facing both the plant and those who attempt to understand its physiology, concentrating in particular on the pathways and mechanisms of movement. The author describes the experiments devised to examine these problems, and explains the concepts which have evolved from the results that have been obtained; at the same time, he points out areas of dispute and deficiencies in current knowledge.

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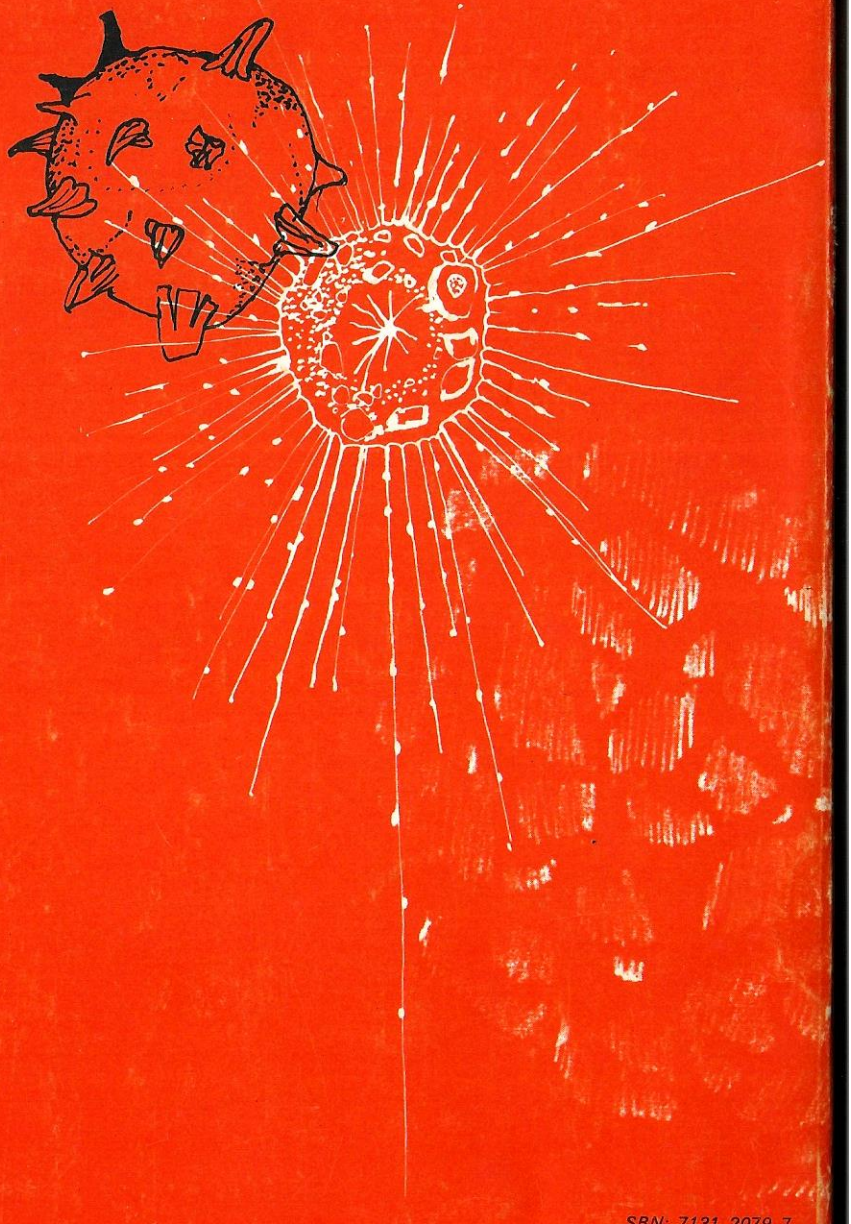

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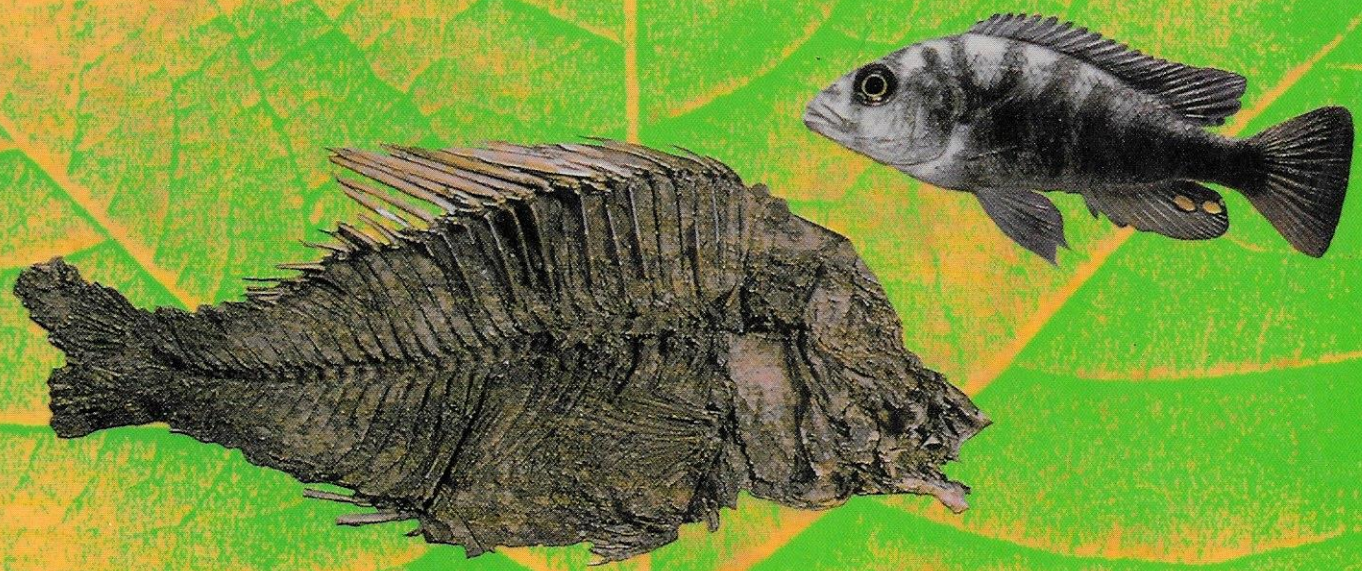

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An understanding of evolution is fundamental for a modern perspective of the life sciences, but it requires familiarity with a wide range of subjects. Topics as diverse as the genetic basis of inheritance, modes of reproduction, ecological relationships and the nature of the fossil record are all relevant. A distinguished team of authors bring such disparate strands together in this single interdisciplinary, comprehensive and modern introduction to evolutionary science, suitable for undergraduates with a basic grounding in biology and/or palaeontology.

Written clearly and accessibly, this book explains and illustrates evolutionary principles, rather than providing a narrative of the history of life. As a result, it emphasizes the teaching of intellectual skills associated with the testing of evolutionary hypotheses. Structured in four parts, the text progresses up the evolutionary hierarchy, from the principles governing evolution within species populations, or *microevolution* (Part I), via the evolution of species (Part II), to evolution beyond the species level, or *macroevolution* (Part III), and finishes with two case studies, on the origin of life, and the influence of humans on the evolution of ourselves and other species (Part IV). Chapter objectives, self-assessment questions and a glossary enable the book to be used either as a classroom text or as a self-tutorial.

Evolution: A Biological and Palaeontological Approach is the core text for students of the Open University's third level Science Course, S365 *Evolution*. Written with a student-centred approach, it provides an excellent undergraduate introductory course on Evolution.

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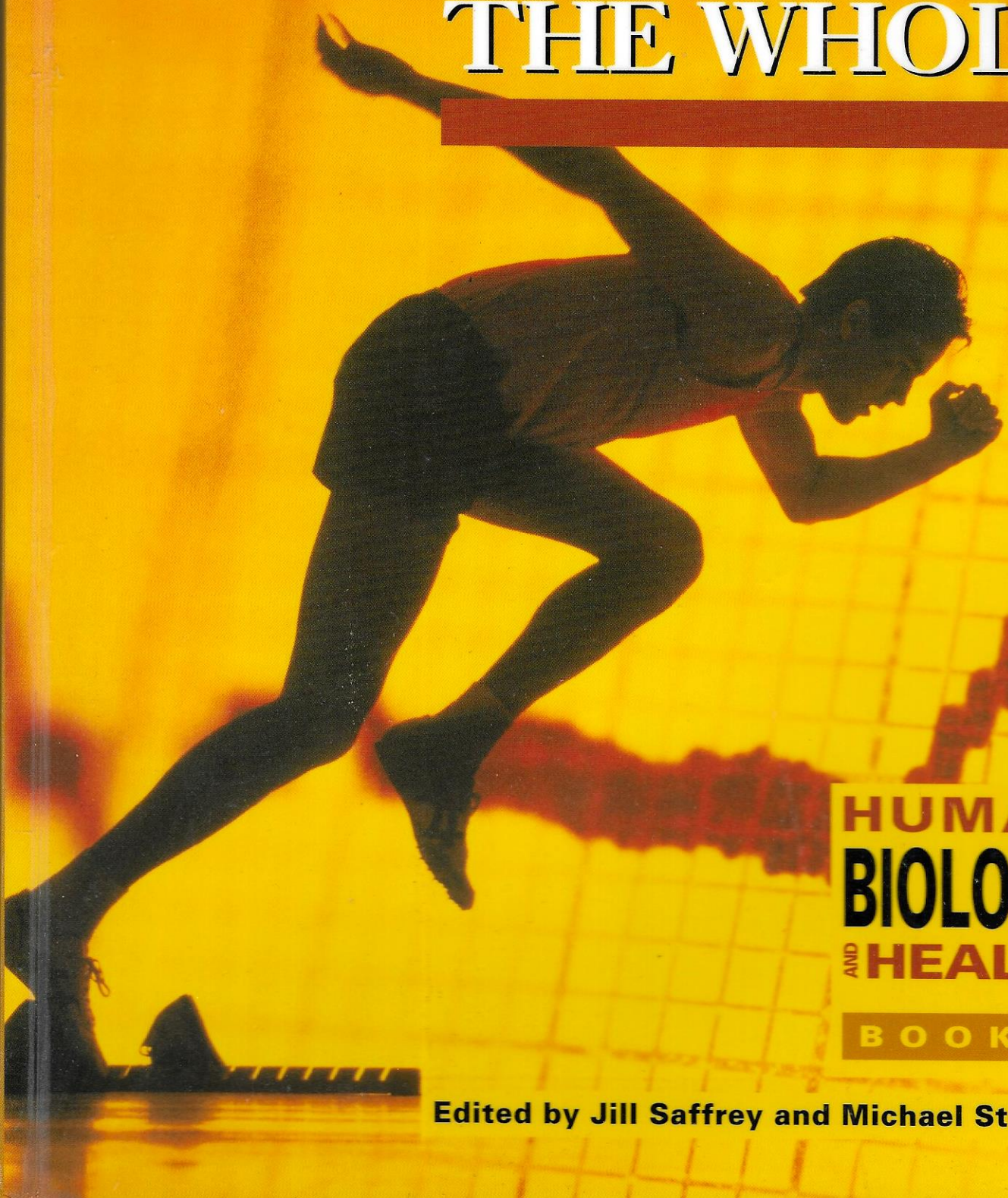

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